



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,021	04/15/2004	Shannon V. Davidson	064747.1017	7500
45507	7590	10/31/2008		
BAKER BOTTS LLP 2001 ROSS AVENUE 6TH FLOOR DALLAS, TX 75201-2980				
EXAMINER				
VO, TED T				
ART UNIT		PAPER NUMBER		
2191				
NOTIFICATION DATE		DELIVERY MODE		
10/31/2008		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOmail3@bakerbotts.com
PTOmail4@bakerbotts.com

Office Action Summary

Application No.

10/825,021

Applicant(s)

DAVIDSON ET AL.

Examiner

TED T. VO

Art Unit

2191

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 25 and 26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 25 and 26 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date 10/01/2008
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This action is in response to the communication filed on 08/11/2008.

Claims 1-26 are pending in the application.

Election/Restrictions

2. Claims 25-26 are directed to an invention that is independent or distinct from the original claims. Claims are now withdrawn.

Applicant's election without traverse of the originally filed claims in the reply filed on 08/11/2008 is acknowledged. Accordingly, claims 25-26 require canceling in the next reply.

Response to Arguments

3. This is in response to the arguments filed in the remarks filed on 08/11/2008.

In view of the argument remark, Claims 9-24 rejected under 35 U.S.C 101 is withdrawn.

In view of the argument remark, Claims 1-24 rejected under 35 U.S.C 112 second paragraph is withdrawn.

Regarding the argument under the rejection of Claims 1-24 under Kelly, Applicants argument remarks merely submitted that Keller does not teach *each node in the plurality: of*

nodes comprising a switching fabric integrated to a card and at least two processors integrated to the card.

Examiner response: The Keller HPC (High Performance Computing) machines include a cluster of nodes that are scheduled for execution. Each node represents a resource such as a processor that comprises an integrated fabric (submitted by Examiner in the prior response). The specification's the nodes have the same as they are used and discussed by Keller (see submitted Keller: "Anatomy of A Resource Management System for HPC Clusters") (hereinafter: Keller2). In Keller "Scheduling in HPC Resource Management Systems: Queuing vs. Planning" (hereinafter: Keller1). In Keller1, it provides load balancing using an optimizer to the cluster of nodes which is scheduled by a scheduler; the cluster of nodes is the same as the cluster of node in Keller2 (See Figure 13, p. 16). In Keller2, this cluster of nodes has a switching fabric integrated to a card and at least two processors integrated to the card.

It should be noted that the Keller1 inherently teaches "switching fabric" as it is in Keller2. By section 2131.01 in MPEP, the Keller2 will be included for

- (A) Prove the primary reference contains an "enabled disclosure; "
- (B) Explain the meaning of a term used in the primary reference; or
- (C) Show that a characteristic not disclosed in the reference is inherent.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-24 are rejected under 35 U.S.C. 102(a) as being anticipated by Axel Keller et al., al., “Scheduling in HPC Resource Management Systems: Queuing vs. Planning”, Proceedings of the 9th Workshop on Job Scheduling Strategies for Parallel Processing, Seattle, WA, pages: 1-19, 6-2003 (hereinafter: Keller1) and “Anatomy of A Resource Management System for HPC Clusters”, 2001 (hereinafter: Keller2), mailed on 05/07/2007.

See MPEP:

2131.01 Multiple Reference 35 U.S.C. 102 Rejections

Normally, only one reference should be used in making a rejection under 35 U.S.C. 102. However, a 35 U.S.C. 102 rejection over multiple references has been held to be proper when the extra references are cited to:

- (A) Prove the primary reference contains an “enabled disclosure;”
- (B) Explain the meaning of a term used in the primary reference; or
- (C) Show that a characteristic not disclosed in the reference is inherent.

As per Claim 1: Keller discloses,

A method (Keller1: p.6, Fig. 2) comprising:

determining an original subset of a plurality of nodes (i.e. nodes in a cluster: HPC, e.g. see Keller2: p. 16: Figure 13), *the original subset comprising nodes currently unallocated to a job* (Keller1: see p. 15, last paragraph: e.g. ‘the administrator establish’: “*determining*”, ‘N defines the number of nodes which are not allocatable..’: “*currently unallocated to a job*”), *each node in the plurality of nodes comprising a switching fabric integrated to a card and at least two processors integrated to the card* (Keller2: See Grammar 3.2.1, p. 15amd Figure 13, p. 16); *selecting a job from a job queue* (i.e. an execution is selected on a job queue (See title of Keller1)); *and*

executing the selected job (i.e. scheduling) *using at least a portion of the original subset* (Keller1: See p. 16, the grouping of different dependency graphs in the HPC scheduling – the ability of nodes being interconnected by edge via communication endpoints).

As per Claim 2: Keller discloses, *The method of claim 1, wherein selecting the job comprises selecting the job from the job queue based on priority* (See p. 3: sec. 2.1 Queuing Systems: queue priority), *the selected job comprising dimensions not greater than a topology of the original subset* (See p. 15, last paragraphs: refer to Threshold, and N nodes are not allocatable).

As per Claim 3: Keller discloses (refer to Keller1 reference), *The method of claim 2, wherein selecting the job from the job queue based on priority comprises: sorting the job queue based on job priority* (: p. 3, sec. 2.1); *selecting a first job from the sorted job queue* (p. 3, sec. 2.1); *determining dimensions* (i.e. Network topology, or see Fig. 1 the axis of Available resources) *of*

the first job with the topology of the original subset (p. 14, in Mapping, see “static” and dynamic”, and p. 15: “N”); *and in response to the dimensions of the first job being greater than the topology of the original subset* (See Fig. 1 and p. 15: “system wide node limit”), *selecting a second job from the sorted job queue* (i.e. ability of the queue systems for using free resources with waiting resource requests (in p. 3), ability of co-allocation, of grouping different dependency graphs of the queue system and planning (sec. 2.1 and 2.2)).

As per Claim 4: Keller discloses (refer to Keller1 reference), *The method of claim 2, wherein the dimensions of the first job are based, at least in part, on one or more job parameters and an associated policy* (i.e. resources/against time axis as mentioned in p. 3:1-3).

As per Claim 5: Keller discloses (refer to Keller1 reference), *The method of claim 2, further comprising dynamically allocating a job spare from the original subset based, at least in part, on the dimensions of the job, wherein executing the selected job comprises executing the selected job using the job spare* (See sec. 3.2, start at p.6, and noted that the queue systems/planning has an ability to allocate job spare as using the free recourses for waiting request resources).

As per Claim 6: Keller discloses, *The method of claim 1, wherein the plurality of nodes comprises a first plurality* (Keller1: see node in clusters in p. 1, different dependency graphs, p. 16) *and the method further comprises: determining that dimensions of the selected job are greater than a topology of the first plurality* (Keller1: i.e. number N and threshold T (p. 15)); *selecting one or more nodes from a second plurality of nodes* (See Fig. 1, and last paragraph in p. 15), *each of the nodes in the second plurality of nodes comprising comprising a switching*

fabric integrated to a card and at least two processors integrated to the card (Keller2: See Grammar 3.2.1, p. 15 and Figure 13, p. 16);

and adding the nodes selected from the second plurality to the original subset to satisfy the dimensions of the selected job (Keller1: See the sec. 2.1 and 2.2).

As per Claim 7: Keller discloses, *The method of claim 6, further comprising returning the nodes selected from the second plurality to the second plurality* (Keller1: see node in clusters in p. 1, different dependency graphs, p. 16, i.e. another job/ node is selected in queuing)

As per Claim 8: Keller discloses, *The method of claim 1, further comprising; determining that a second job that was executing on a second subset of the plurality of nodes has failed* (Keller1: See last paragraph in p. 15, or the description of System Wide Node Limit (i.e. SWNL), for the case when the user requests a number of nodes $T+N$ greater than the threshold T); *adding the second subset to the original subset; and adding the failed job to the job queue* (the SWNL defines automatically the number N is not allocatable nodes).

As per Claims 9-16: See rationale addressed in the rejection of Claims 1-8, respectively.

As per Claims 17-24: See rationale addressed in the rejection of Claims 1-8, respectively.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted T. Vo whose telephone number is (571) 272-3706. The examiner can normally be reached on 8:00AM to 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wei Y. Zhen can be reached on (571) 272-3708.

The facsimile number for the organization where this application or proceeding is assigned is the Central Facsimile number 571-273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTV
October 15, 2008

/Ted T. Vo/
Primary Examiner, Art Unit 2191